AIR QUALITY IMPROVEMENT PLAN
For The
NASHVILLE EARLY ACTION COMPACT AREA
March 23, 2004

Section 1. Introduction

The Air Quality Improvement Plan (AQIP) submittal is being made in accordance with the Nashville MSA Early Action Compact protocol and the Environmental Protection Agency *Deferral of Effective Date of Nonattainment Designations for 8-Hour Ozone National Ambient Air Quality Standards for Early Action Compact Areas; Proposed Rule*. This submittal is for the purpose of complying with the March 31, 2004 deadline to submit a local air quality plan defining the specific measures to be taken to ensure compliance with the 8-hour ozone National Ambient Air Quality Standard (NAAQS) no later than December 31, 2007. The AQIP contains measures that are specific, quantified and permanent for the Nashville MSA. It includes implementation dates and details as to how the measures were chosen and quantified.

The Nashville MSA is comprised of eight counties in Middle Tennessee. These counties are Cheatham, Davidson, Dickson, Robertson, Rutherford, Sumner, Williamson and Wilson. The counties of Davidson, Rutherford, Sumner, Williamson and Wilson comprise the existing 1-hour ozone maintenance area. The entire Nashville MSA is attaining the 1-hour ozone standard. For purposes of the Nashville MSA Early Action Compact, the counties of Cheatham, Dickson and Robertson were added.

Following is a table (Table 1-1) showing the most recent 8-hour ozone design values (DV) for the Nashville MSA.

Table 1-1. Nashville MSA 8-Hour Ozone Design Values

Date	Design Value (ppb)
1997 - 1999	102
1998 - 2000	100
1999 - 2001	93
2000 - 2002	88
2001 - 2003	86

As shown in Table 1-1, the Nashville MSA 8-hour ozone DV has demonstrated a downward trend since the 1997 - 1999 timeframe. It is thought that this trend is due to:

- Volatile organic compound (VOC) emission reductions due to the significant effort made to attain the 1-hour ozone NAAQS;
- NOx SIP call; and
- Lower emission light duty cars and trucks due to the tightening of Federal standards.

It is anticipated that this trend will continue, due in part, to the efforts above and the combination of near term Federal emission reduction measures and the local measures described in this AQIP.

The Nashville MSA along with other Tennessee counties, the States of Tennessee, Arkansas and Mississippi have formed a partnership called the Arkansas, Tennessee, Mississippi Ozone Study (ATMOS). Systems Applications International (SAI) was chosen as the contractor to aid in this study. In brief summary, the ATMOS participants evaluated historical ozone data, emissions inventories and weather patterns and designed a plan to bring the represented areas into attainment with the 8-hour ozone standard. Using the information above, a total of three episodes were chosen to represent high ozone in the respective areas. Emissions were "grown" to 2007 and various Federal and local control strategies were applied. The UAM-V model was then used to estimate 2007 8-hour ozone values in the study area.

These activities will be described in more detail in the attainment demonstration portion of this submittal prepared by SAI, but the important end result of this effort shows the Nashville MSA 2007 estimated design value (EDV) to be 82 ppb. Attainment with the 8-hour ozone NAAQS is achieved when the 3-year average of the annual fourth highest 8-hour average ozone value is less than 85 ppb. Therefore, the remainder of this AQIP will document the measures to be taken by the Nashville MSA to help ensure the continued deferral of nonattainment status and the ultimate demonstration of attainment of the 8-hour ozone standard by December 31, 2007.

Section 2. Original List of "Likely" Control Measures

Table 2-1 is a listing of the "likely" control measures originally under consideration in the Nashville MSA. After much discussion with stakeholders, this original list of "likely" control measures was edited to the following list.

- Control on the open burning of construction land clearing material (Davidson County only);
- Air quality action day (AQAD) measures;
- HOV lane expansion (Davidson and Rutherford County only);
- Trip reduction plans (Davidson and Williamson County only);
- Rideshare programs;
- Traffic signal synchronization (all counties except Cheatham);
- Roadside assistance program (Davidson County only);
- New greenways and bikeways;
- Improve bus ridership (Davidson County only);
- New rail service (Davidson and Wilson County only); and
- Land use controls to reduce vehicle miles traveled (VMT).

Table 2-1. LIST OF NASHVILLE MSA "Likely" EAC CONTROL OPTIONS BASED ON INFORMATION AVAILABLE 6-1-03

Source Category	Control Measure Description	Pollutant Reduced	S=Stationary M=Mobile C=Combination	N=New O=On-going E=Expand Existing	R=Regulatory V=Voluntary	L=Local S=Statewide
Stationary NOx sources	NOx RACT for sources not covered by the Federal NOx SIP call--Apply low NOx combustion controls to sources such as large internal combustion engines, boilers and other fuel burning equipment	NOx	S	N	R	L and/or S (TDEC)
Open burning	Revise open burning regulations to prohibit residential burning of leaves and yard clippings and restrict the use of air curtain destructors on air quality action days	NOx, PM, VOC,CO	S	E	R	L and/or S (TDEC)
LDGV, HDGV	Modify basic vehicle inspection program to include up to 10,000 lb. vehicles, tighten standards for 6,000 - 8,000 lb. vehicles	NOx, PM VOC,CO	M-gasoline	E	R	L and/or S (TDEC)
On-road vehicles	Expand HOV network and increase efficiency of existing HOV lane network	NOx, PM VOC,CO	M-gasoline	O	V	L and/or S (TDOT)
On-road vehicles	Trip reduction plan for large employers including Metro and State	NOx, PM, VOC,CO	M-gasoline	O	V	L
On-road vehicles	Area wide rideshare incentives	NOx, PM VOC,CO	M-gasoline	E	V	L
On-road vehicles	Intelligent transportation system such as traffic signal synchronization and roadside assistance/incidence management program	NOx, PM VOC,CO	M-gasoline and diesel	O	V	L and/or S (TDOT)
On-road vehicles	Additional greenways and bike paths	NOx, PM, VOC,CO	M-gasoline	O	V	L

Table 2-1 (continued). LIST OF NASHVILLE MSA "LIKELY" EAC CONTROL OPTIONS

Source Category	Control Measure Description	Pollutant Reduced	S=Stationary M=Mobile C=Combination	N=New O=On-going E=Expand Existing	R=Regulatory V=Voluntary	L=Local S=Statewide
On-road HDDV, buses and fleet vehicles	Encourage accelerated replacement with newer lower emitting vehicles, vehicles using cleaner fuels or using add on controls	NOx, PM, VOC,CO	M-diesel	N	V	L and/or S (TDEC/TDOT)
HDDV including buses	Truck stop electrification/Anti-idling regulation	NOx, PM, VOC,CO	M-diesel	N	V/R	L and/or S (TDEC)
Transit buses	Reduced fare on AQAD	NOx, PM, VOC,CO	M-gasoline	N	V	L
Transit Vehicles	Improve transit service including bus rapid transit and rail where feasible	NOx, PM, VOC,CO	M-gasoline and diesel	N	V	L
Off Road Vehicles and Equipment	Encourage accelerated replacement with newer lower emitting vehicles, vehicles using cleaner fuels or using add on controls	NOx, PM, VOC,CO	M-diesel	N	V	L and/or S (TDEC/TDOT)
On and Off Road Diesel Vehicles	Encourage the use of fuel additive to increase Cetane number of diesel fuel	NOx	M-diesel	N	V	L and/or S (TDEC/TDOT)
Off Road Vehicles and Equipment	On State and Metro construction jobs, give preference to bidders using equipment that has been replaced with newer lower emitting vehicles, vehicles using cleaner fuels or using add on controls	NOx, PM, VOC,CO	M-diesel	N	R	L and/or S (TDOT)
Airport service equipment and vehicles	Low NOx technologies	NOx	C	N	V/R	L
All categories	Air Quality Action Day (AQAD)	NOx, PM, VOC,CO	C	N	V	L and/or S (TDEC/TDOT)
Land use	Land use policies designed to reduce VMT growth	NOx, PM, VOC,CO	C	N	V/R	L

Section 3. Final Emission Reduction Measures by EAC County

Tables 3-1 through 3-8 are a county by county summary of the local voluntary emission reduction strategies that the Nashville EAC counties plan to implement. Table 3-9 is the EAC area-wide summary of local voluntary emission reductions used to aid in the attainment of the 8-hour ozone standard by December 31, 2007.

Table 3-1. DAVIDSON COUNTY EMISSION REDUCTION MEASURES AS OF 3/31/04

Source Category	NOx TPD	VOC TPD	CO TPD
Area Sources			
-Construction land clearing (open burning)	0.111	0.423	3.000
Non-Road Mobile Sources	0	0	0
On-Road Mobile Sources			
-HOV lane expansion	0.012	0.015	0.174
-Trip reduction plans	0.0398	0.051	0.5775
-Rideshare programs	0.001	0.0013	0.0138
-Traffic signal synchronization	0.091	0.1097	0.6786
-Roadside assistance program	0.031	0.031	0.250
-New greenways/bikeways	0.0097	0.0123	0.14
-Improve bus ridership	0.01	0.012	0.14
-New rail service	0.016	0.031	0.352
-Land use controls to reduce VMT	0.26	0.11	1.34
-Air Quality Action Day Measures	0.51	0.22	2.68
Low Level Point Sources	0	0	0
Elevated Point Sources	0	0	0
Total TPD Emission Reductions	1.09	1.02	9.35
Total Countywide TPD Emissions	87.7	57.58	462.29
Countywide Percent Emission Reduction	1.24%	1.77%	2.02%
TPD Reductions by Source Category			
-Area Sources	0.111	0.423	3.000
-On-Road Mobile Sources	0.981	0.593	6.346
-Non-Road Mobile Sources	0	0	0
-Low Level Point Sources	0	0	0
-Elevated Point Sources	0	0	0
TPD Emissions by Source Category			
-Area Sources	0.49	21.72	3.35
-On-Road Mobile Sources	48.62	19.81	252.95
-Non-Road Mobile Sources	22.66	9.21	190.45
-Low Level Point Sources	1.1	5.85	1.69
-Elevated Point Sources	14.83	0.99	13.85
Percent Reduction by Source Category			
-Area Sources	22.65%	1.95%	89.55%
-On-Road Mobile Sources	2.02%	2.99%	2.51%
-Non-Road Mobile Sources	0.00%	0.00%	0.00%
-Low Level Point Sources	0.00%	0.00%	0.00%
-Elevated Point Sources	0.00%	0.00%	0.00%

Table 3-2. RUTHERFORD COUNTY EMISSION REDUCTION MEASURES AS OF 3/31/04

Source Category	NOx TPD	VOC TPD	CO TPD
Area Sources	0	0	0
Non-Road Mobile Sources	0	0	0
On-Road Mobile Sources			
-HOV lane expansion	0.005	0.006	0.071
-Rideshare programs	0.001	0.0013	0.0138
-Traffic signal synchronization	0.0375	0.05	0.305
-New greenways/bikeways	0.0073	0.0092	0.105
-Land use controls to reduce VMT	0.09	0.03	0.36
-Air Quality Action Day Measures	0.17	0.06	0.72
Low Level Point Sources	0	0	0
Elevated Point Sources	0	0	0
Total TPD Emission Reductions	0.31	0.16	1.57
Total Countywide TPD Emissions	27.09	32.03	132.09
Countywide Percent Emission Reduction	1.15%	0.49%	1.19%
TPD Reductions by Source Category			
-Area Sources	0.000	0.000	0.000
-On-Road Mobile Sources	0.311	0.157	1.575
-Non-Road Mobile Sources	0	0	0
-Low Level Point Sources	0	0	0
-Elevated Point Sources	0	0	0
TPD Emissions by Source Category			
-Area Sources	3.04	20.47	14.58
-On-Road Mobile Sources	17.02	6.18	77.77
-Non-Road Mobile Sources	6.32	2.13	39.34
-Low Level Point Sources	0.2	3.2	0.2
-Elevated Point Sources	0.51	0.05	0.2
Percent Reduction by Source Category			
-Area Sources	0.00%	0.00%	0.00%
-On-Road Mobile Sources	1.83%	2.53%	2.02%
-Non-Road Mobile Sources	0.00%	0.00%	0.00%
-Low Level Point Sources	0.00%	0.00%	0.00%
-Elevated Point Sources	0.00%	0.00%	0.00%

Table 3-3. SUMNER COUNTY EMISSION REDUCTION MEASURES AS OF 3/31/04

Source Category	NOx TPD	VOC TPD	CO TPD
Area Sources	0	0	0
Non-Road Mobile Sources	0	0	0
On-Road Mobile Sources			
-Rideshare programs	0.001	0.0013	0.0138
-Traffic signal synchronization	0.0325	0.0375	0.225
-New greenways/bikeways	0.0073	0.0092	0.105
-Land use controls to reduce VMT	0.04	0.02	0.21
-Air Quality Action Day Measures	0.08	0.04	0.41
Low Level Point Sources	0	0	0
Elevated Point Sources	0	0	0
Total TPD Emission Reductions	0.16	0.11	0.96
Total Countywide TPD Emissions	78.4	23.4	76.74
Countywide Percent Emission Reduction	0.21%	0.46%	1.26%
TPD Reductions by Source Category			
-Area Sources	0.000	0.000	0.000
-On-Road Mobile Sources	0.161	0.108	0.964
-Non-Road Mobile Sources	0	0	0
-Low Level Point Sources	0	0	0
-Elevated Point Sources	0	0	0
TPD Emissions by Source Category			
-Area Sources	0.99	13.92	6.74
-On-Road Mobile Sources	8.86	3.68	44.7
-Non-Road Mobile Sources	3.91	1.29	20.16
-Low Level Point Sources	0.38	4.26	0.14
-Elevated Point Sources	64.26	0.25	5
Percent Reduction by Source Category			
-Area Sources	0.00%	0.00%	0.00%
-On-Road Mobile Sources	1.81%	2.93%	2.16%
-Non-Road Mobile Sources	0.00%	0.00%	0.00%
-Low Level Point Sources	0.00%	0.00%	0.00%
-Elevated Point Sources	0.00%	0.00%	0.00%

Table 3-4. WILLIAMSON COUNTY EMISSION REDUCTION MEASURES AS OF 3/31/04

Source Category	NOx TPD	VOC TPD	CO TPD
Area Sources	0	0	0
Non-Road Mobile Sources	0	0	0
On-Road Mobile Sources			
-Trip reduction plans	0.0133	0.017	0.1925
-Rideshare programs	0.001	0.0013	0.0138
-Traffic signal synchronization	0.0175	0.0225	0.1425
-New greenways/bikeways	0.0073	0.0092	0.105
-Land use controls to reduce VMT	0.05	0.02	0.26
-Air Quality Action Day Measures	0.11	0.04	0.51
Low Level Point Sources	0	0	0
Elevated Point Sources	0	0	0
Total TPD Emission Reductions	0.20	0.11	1.22
Total Countywide TPD Emissions	20.87	20.52	139.43
Countywide Percent Emission Reduction	0.95%	0.54%	0.88%
TPD Reductions by Source Category			
-Area Sources	0.000	0.000	0.000
-On-Road Mobile Sources	0.199	0.110	1.224
-Non-Road Mobile Sources	0	0	0
-Low Level Point Sources	0	0	0
-Elevated Point Sources	0	0	0
TPD Emissions by Source Category			
-Area Sources	1.57	10.97	12.27
-On-Road Mobile Sources	12.6	5.28	66.99
-Non-Road Mobile Sources	6	2.46	55.45
-Low Level Point Sources	0.55	1.78	0.57
-Elevated Point Sources	0.15	0.03	4.15
Percent Reduction by Source Category			
-Area Sources	0.00%	0.00%	0.00%
-On-Road Mobile Sources	1.58%	2.08%	1.83%
-Non-Road Mobile Sources	0.00%	0.00%	0.00%
-Low Level Point Sources	0.00%	0.00%	0.00%
-Elevated Point Sources	0.00%	0.00%	0.00%

Table 3-5. WILSON COUNTY EMISSION REDUCTION MEASURES AS OF 3/31/04

Source Category	NOx TPD	VOC TPD	CO TPD
Area Sources	0	0	0
Non-Road Mobile Sources	0	0	0
On-Road Mobile Sources			
-Rideshare programs	0.001	0.0013	0.0138
-Traffic signal synchronization	0.015	0.0175	0.105
-New greenways/bikeways	0.0073	0.0092	0.105
-New rail service	0.016	0.031	0.352
-Land use controls to reduce VMT	0.05	0.02	0.21
-Air Quality Action Day Measures	0.11	0.03	0.43
Low Level Point Sources	0	0	0
Elevated Point Sources	0	0	0
Total TPD Emission Reductions	0.20	0.11	1.22
Total Countywide TPD Emissions	14.72	15.31	77.95
Countywide Percent Emission Reduction	1.35%	0.71%	1.56%
TPD Reductions by Source Category			
-Area Sources	0.000	0.000	0.000
-On-Road Mobile Sources	0.199	0.109	1.216
-Non-Road Mobile Sources	0	0	0
-Low Level Point Sources	0	0	0
-Elevated Point Sources	0	0	0
TPD Emissions by Source Category			
-Area Sources	1.12	9	5.59
-On-Road Mobile Sources	10.4	3.49	45.08
-Non-Road Mobile Sources	2.45	2.05	27.14
-Low Level Point Sources	0.00	0.18	0.00
-Elevated Point Sources	0.75	0.59	0.14
Percent Reduction by Source Category			
-Area Sources	0.00%	0.00%	0.00%
-On-Road Mobile Sources	1.92%	3.12%	2.70%
-Non-Road Mobile Sources	0.00%	0.00%	0.00%
-Low Level Point Sources	0.00%	0.00%	0.00%
-Elevated Point Sources	0.00%	0.00%	0.00%

Table 3-6. CHEATHAM COUNTY EMISSION REDUCTION MEASURES AS OF 3/31/04

Source Category	NOx TPD	VOC TPD	CO TPD
Area Sources	0	0	0
Non-Road Mobile Sources	0	0	0
On-Road Mobile Sources			
-Rideshare programs	0.001	0.0013	0.0138
-New greenways/bikeways	0.0073	0.0092	0.105
-Land use controls to reduce VMT	0.03	0.01	0.13
-Air Quality Action Day Measures	0.06	0.02	0.27
Low Level Point Sources	0	0	0
Elevated Point Sources	0	0	0
Total TPD Emission Reductions	0.10	0.04	0.52
Total Countywide TPD Emissions	9.51	8.28	41.01
Countywide Percent Emission Reduction	1.03%	0.49%	1.27%
TPD Reductions by Source Category			
-Area Sources	0	0	0
-On-Road Mobile Sources	0.098	0.041	0.519
-Non-Road Mobile Sources	0	0	0
-Low Level Point Sources	0	0	0
-Elevated Point Sources	0	0	0
TPD Emissions by Source Category			
-Area Sources	0.29	3.35	2.65
-On-Road Mobile Sources	6.98	2.77	32.23
-Non-Road Mobile Sources	2.11	0.62	6.11
-Low Level Point Sources	0.13	1.54	0.02
-Elevated Point Sources	0.00	0.00	0.00
Percent Reduction by Source Category			
-Area Sources	0.00%	0.00%	0.00%
-On-Road Mobile Sources	1.41%	1.46%	1.61%
-Non-Road Mobile Sources	0.00%	0.00%	0.00%
-Low Level Point Sources	0.00%	0.00%	0.00%
-Elevated Point Sources	0.00%	0.00%	0.00%

Table 3-7. DICKSON COUNTY EMISSION REDUCTION MEASURES AS OF 3/31/04

Source Category	NOx TPD	VOC TPD	CO TPD
Area Sources	0	0	0
Non-Road Mobile Sources	0	0	0
On-Road Mobile Sources			
-Rideshare programs	0.001	0.0013	0.0138
-Traffic signal synchronization	0.0075	0.015	0.08
-New greenways/bikeways	0.0073	0.0092	0.105
-Land use controls to reduce VMT	0.03	0.02	0.16
-Air Quality Action Day Measures	0.06	0.03	0.33
Low Level Point Sources	0	0	0
Elevated Point Sources	0	0	0
Total TPD Emission Reductions	0.11	0.08	0.69
Total Countywide TPD Emissions	11.74	15.34	56.23
Countywide Percent Emission Reduction	0.90%	0.49%	1.22%
TPD Reductions by Source Category			
-Area Sources	0	0	0
-On-Road Mobile Sources	0.106	0.076	0.689
-Non-Road Mobile Sources	0	0	0
-Low Level Point Sources	0	0	0
-Elevated Point Sources	0	0	0
TPD Emissions by Source Category			
-Area Sources	0.75	5.52	3.92
-On-Road Mobile Sources	7.83	4.01	43.01
-Non-Road Mobile Sources	2.59	0.68	9.19
-Low Level Point Sources	0.08	2.73	0.01
-Elevated Point Sources	0.49	2.4	0.1
Percent Reduction by Source Category			
-Area Sources	0.00%	0.00%	0.00%
-On-Road Mobile Sources	1.35%	1.88%	1.60%
-Non-Road Mobile Sources	0.00%	0.00%	0.00%
-Low Level Point Sources	0.00%	0.00%	0.00%
-Elevated Point Sources	0.00%	0.00%	0.00%

Table 3-8. ROBERTSON COUNTY EMISSION REDUCTION MEASURES AS OF 3/31/04

Source Category	NOx TPD	VOC TPD	CO TPD
Area Sources	0	0	0
Non-Road Mobile Sources	0	0	0
On-Road Mobile Sources			
-Rideshare programs	0.001	0.0013	0.0138
-Traffic signal synchronization	0.005	0.0075	0.05
-New greenways/bikeways	0.0073	0.0092	0.105
-Land use controls to reduce VMT	0.06	0.02	0.21
-Air Quality Action Day (AQAD) Measures	0.12	0.03	0.43
Low Level Point Sources	0	0	0
Elevated Point Sources	0	0	0
Total TPD Emission Reductions	0.19	0.07	0.81
Total Countywide TPD Emissions	13.21	13.52	50.8
Countywide Percent Emission Reduction	1.46%	0.50%	1.59%
TPD Reductions by Source Category			
-Area Sources	0	0	0
-On-Road Mobile Sources	0.193	0.068	0.809
-Non-Road Mobile Sources	0	0	0
-Low Level Point Sources	0	0	0
-Elevated Point Sources	0	0	0
TPD Emissions by Source Category			
-Area Sources	0.96	9.02	3.47
-On-Road Mobile Sources	9.00	3.06	38.16
-Non-Road Mobile Sources	3.22	0.45	9.16
-Low Level Point Sources	0.03	0.95	0.01
-Elevated Point Sources	0.00	0.04	0.00
Percent Reduction by Source Category			
-Area Sources	0.00%	0.00%	0.00%
-On-Road Mobile Sources	2.15%	2.22%	2.12%
-Non-Road Mobile Sources	0.00%	0.00%	0.00%
-Low Level Point Sources	0.00%	0.00%	0.00%
-Elevated Point Sources	0.00%	0.00%	0.00%

Table 3-9. TOTAL EMISSION REDUCTION MEASURES FOR ALL NASHVILLE EAC COUNTIES AS OF 3/31/04

Source Category	NOx TPD	VOC TPD	CO TPD
Area Sources			
-Construction land clearing (open burning)	0.111	0.423	3.000
Non-Road Mobile Sources	0	0	0
On-Road Mobile Sources			
-HOV lane expansion	0.017	0.021	0.245
-Trip reduction plans	0.053	0.068	0.770
-Rideshare programs	0.008	0.010	0.110
-Traffic signal synchronization	0.206	0.260	1.586
-Roadside assistance program	0.031	0.031	0.250
-New greenways/bikeways	0.061	0.077	0.875
-Improve bus ridership	0.010	0.012	0.140
-New rail service	0.032	0.062	0.704
-Land use controls to reduce VMT	0.610	0.250	2.880
-Air Quality Action Day (AQAD) Measures	1.220	0.470	5.780
Low Level Point Sources	0	0	0
Elevated Point Sources	0	0	0
Total TPD Emission Reductions	2.359	1.684	16.341
Total EAC Wide TPD Emissions	263.240	185.980	1036.540
EAC Wide Percent Emission Reduction	0.90%	0.91%	1.58%
TPD Reductions by Source Category			
-Area Sources	0.111	0.423	3.000
-On-Road Mobile Sources	2.248	1.261	13.341
-Non-Road Mobile Sources	0	0	0
-Low Level Point Sources	0	0	0
-Elevated Point Sources	0	0	0
TPD Emissions by Source Category			
-Area Sources	9.210	93.970	52.570
-On-Road Mobile Sources	121.310	48.280	600.890
-Non-Road Mobile Sources	49.260	18.890	357.000
-Low Level Point Sources	2.470	20.490	2.640
-Elevated Point Sources	80.990	4.350	23.440
Percent Reduction by Source Category			
-Area Sources	1.21%	0.45%	5.71%
-On-Road Mobile Sources	1.85%	2.61%	2.22%
-Non-Road Mobile Sources	0.00%	0.00%	0.00%
-Low Level Point Sources	0.00%	0.00%	0.00%
-Elevated Point Sources	0.00%	0.00%	0.00%

Table 3-10 shows the expected implementation dates for each of the emission reduction measures to be implemented in the Nashville EAC area. It is our intention to have as many measures as possible implemented by the 2005 ozone season in order to have maximum impact during the 2005 - 2007 averaging period.

Table 3-10. IMPLEMENTATION DATES FOR EMISSION REDUCTION MEASURES

Emission Reduction Measure	Implementation Date
Construction land clearing (open burning)	March 1, 2004
HOV lane expansion	2004 - 2006
Trip reduction plans	2004 - 2006
Rideshare programs	2004 - 2006
Traffic signal synchronization	2004 - 2006
Roadside assistance program	2004 - 2006
New greenways/bikeways	Most in 2004, but some in 2005 and 2006
Improve bus ridership	Most in 2004, but some in 2005 and 2006
New rail service	2005 - 2006
Land use controls to reduce VMT	2004 and beyond
Air Quality Action Day (AQAD) Measures	May 1, 2004

As previously mentioned, a list of 18 "likely" control measures were initially evaluated. The list was pared to the final list of 12 control measures based on the amount of emission reductions needed, the ability to leverage against initiatives already underway, the estimated design value after UAM modeling of the near term federal measures and the recommendation of the Nashville MPO Executive Committee. All of the measures will not be adopted in all counties. This is due to the near term availability of the control measure such as new rail service, the political realities as in the case of open burning and sufficient vehicle miles of travel to justify HOV lanes, roadside assistance programs and improving bus ridership.

The next section of this report will discuss how each of the above measures were chosen and how the emission reductions were quantified.

Section 4. Adopted Local Control Measures (to be implemented 2004-2006)

Below is a description of each control measure to be implemented in the Nashville EAC area. With the exception of the open burning measure and land use planning, each of these measures have been added to the Nashville MPO's current Transportation Improvement Program (TIP) for funding and implementation during the next three years. The following relevant project pages from the 2004 - 2006 TIP are attached to this submittal as documentation that the projects/programs are funded. These are included as Appendix 1.

- HOV lane expansion;
- Rideshare and trip reduction programs;
- Traffic signal synchronization;
- Roadside assistance program;
- New greenways and bikeways;

- Improving bus ridership;
- New rail service; and
- Air Quality Action Day measures

For calculations of the expected emission reductions from each control measure, please refer to *Estimates of Potential Emission Reductions for the Nashville Ozone Early Action Compact Area*. The University of Tennessee's Civil and Environmental Engineering Department prepared the report. It is included as Appendix 2 of this submittal.

Section 4-1. Restriction on the Open Burning of Land Clearing Material

The reduction to be obtained from the open burning of land clearing material is only applicable in Davidson County. Currently, open burning of land clearing material is not allowed in Davidson County unless a contractor first obtains permits from the Metro Nashville Air Pollution Control Division (MNAPCD) and the Metro Nashville Fire Marshal and then only while properly using an air curtain destructor. On March 1, 2004, the MNAPCD began adding a condition to each air curtain destructor permit. This condition will prohibit the open burning of land clearing material on any day the air quality is forecast to be in or worse than the unhealthy for sensitive groups category as determined by the EPA air quality index. Enforcement will be by the field inspection staff of the MNAPCD. The staff person responsible for the air curtain destructor permit will ensure that no burning occurs on any day the air quality is forecast to be in or worse than the unhealthy for sensitive groups category as determined by the EPA air quality index. This will be achieved by a permit condition on the air curtain destructor permit requiring the contractor to call the MNAPCD recorded air quality forecast telephone message. If necessary, an on-site inspection by MNAPCD staff will be conducted to ensure that no burning takes place until the ozone air quality is forecast to improve into the good or moderate range.

Since the open burning of land clearing material is not allowed except under the conditions stated above, no new regulation or ordinance was required. It will simply require a policy change to the standard operating procedures already in place at the MNAPCD. This policy change was made March 1, 2004, and is currently in effect.

The calculation procedure used to estimate the emission reductions from limiting open burning in Davidson County can be found in Section 3.2.4 of the report *Estimates of Potential Emission Reductions For The Nashville Ozone Early Action Compact Areas*. Table 3.2.16 of the referenced report contains the potential emission reductions for Davidson County. The reductions for Davidson County were estimated using historical information on the typical number of air curtain destructor permits issued, the duration of use and the number of acres burned per day. This information was combined with a fuel loading factor and emission factors from the *Emission Inventory Improvement Program, Open Burning, EPA April, 2001*.

Section 4-2. High Occupancy Vehicle (HOV) Lane Expansion

The MPO and the Tennessee Department of Transportation will continue to implement the system of interstate High Occupancy Vehicle (HOV) lanes throughout the Nashville region. Funding has been programmed for HOV lanes in three new areas during the next 3 years:

- along Interstate 40 in Davidson County, from Interstate 24 to Donelson Pike;
- along Interstate 24 in Rutherford County from U.S. 231 to State Highway 96; and
- along Interstate 24 in Rutherford County from State Highway 96 to State Route 840.

These three projects will add more than 11 miles to the region's total HOV laneage. Calculations used to estimate the emission reductions from the addition of these HOV lanes can be found in Section 3.8 "HOV Lane Expansions" in the report *Estimates of Potential Emission Reductions For The Nashville Ozone Early Action Compact Areas.* Table 3.8.8 shows the expected emission reductions for the area.

Section 4-3. Funding and new infrastructure for trip reduction/rideshare programs

By 2007, the Regional Transportation Authority and the TMA Group in Williamson County will generate a 10% increase in the number of persons using their rideshare programs, including carpools, vanpools, and intercounty express bus routes.

Local governments in the MPO have programmed the following funds to support this effort:

- $2.6 million in the five-county area for RTA rideshare programs, plus an additional $1 million for Williamson County/TMA Group rideshare programs;
- $800,000 for new vans and upgraded intercounty buses;
- $3.25 million for new park & ride lots;
- $1.9 million for two intermodal stations in Rutherford County (Smyrna); and
- $2.7 million to implement "transit priority" infrastructure between downtown Nashville and the West End area.

Calculations used to estimate the emission reductions from the trip reduction measures can be found in Section 3.9 "Trip Reduction Plans" in the report *Estimates of Potential Emission Reductions For The Nashville Ozone Early Action Compact Areas.* Table 3.9.2 shows the expected emission reductions for the area. Calculations used to estimate the emission reductions from rideshare programs can be found in Section 3.10 "Expand Rideshare Programs" in the report *Estimates of Potential Emission Reductions For The Nashville Ozone Early Action Compact Areas.* Table 3.10.2 shows the expected emission reductions for the area.

Section 4-4. Traffic Signal Synchronization and Related Improvements

The five counties in the Nashville Area MPO have committed transportation funds for the following traffic signal improvements to reduce emissions on urban arterial corridors throughout the region:

- $5.9 million in Davidson County;
- $1.2 million in Rutherford County;
- $1.4 million in Sumner County; and
- $1.5 million in Williamson County.

Calculations used to estimate the emission reductions from traffic signal synchronization can be found in Section 3.11A "Traffic Flow Improvement Programs" in the report *Estimates of Potential Emission Reductions For The Nashville Ozone Early Action Compact Areas.* Table 3.11A.2 shows the expected emission reductions for the area.

Section 4-5. Roadside Assistance and Freeway Incident Management Program

The Tennessee Department of Transportation has decided to make permanent its freeway incident management program, being operated on the interstates within the Nashville urban area. Video cameras that monitor traffic link to a central Traffic Management Center for the region, which can dispatch professional assistance to locations where an incident is detected. Since previous studies found that up to two-thirds of congestion is incident-related, quick response and clearance of an incident significantly reduces traffic delays and extended periods of vehicle idling.

Calculations used to estimate the emission reductions from roadside assistance program can be found in Section 3.11B "Roadside Assistance Program" in the report *Estimates of Potential Emission Reductions For The Nashville Ozone Early Action Compact Areas.* Table 3.11B.1 shows the expected emission reductions for the area.

Section 4-6. Build New Pedestrian Facilities and Bikeways

The five counties have programmed nearly $8 million through the Nashville MPO for new pedestrian facilities and bikeways, and to increase use of the existing system by improving its safety and functionality. This does not include federal transportation enhancement funds awarded by TDOT, nor does it include projects that will be entirely funded by cities and counties.

Federal and related state and local matching funds for sidewalks, bikeways and greenways includes:

- $4.7 million in Davidson County;
- $715,000 in Rutherford County;
- $1.3 million in Sumner County;
- $150,000 in Williamson County; and
- $1.1 million in Wilson County.

In addition, the Nashville MPO has programmed more than $1 million to build sidewalks in downtown Springfield and in the City of White House (both in Robertson County). This investment will provide air quality benefits to Robertson County, another member of the Nashville Area Early Action Compact.

Calculations used to estimate the emission reductions from building new pedestrian facilities and bikeways can be found in Section 3.12 "New Greenways and Bikeways" in the report *Estimates of Potential Emission Reductions For The Nashville Ozone Early Action Compact Areas.* Table 3.12.2 shows the expected emission reductions for the area.

Section 4-7. Improve Bus Ridership

Davidson County has programmed funding in the regional Transportation Improvement Program to make several key enhancements to its transit service. These projects are expected to yield measurable improvements in ridership for the Metro Transit Authority system, thereby leading to reductions in auto emissions.

First and most importantly, Davidson County is building a new transit facility in downtown Nashville. This new center will provide passengers with a safe, clean indoor location to transfer buses, replacing the current outdoor shelters along Deaderick Street. Restrooms, a ticket counter and retail are among the amenities planned for the new center. Davidson County is also spending its local share of Congestion Mitigation/Air Quality funds to add new express bus routes to previously unserviced/underserviced areas of the county. Aging buses are being replaced, and the total bus fleet expanded, through the purchase of 50 new vehicles this year and an additional 50 next year.

Finally, the Metro Transit Authority is making improvements to bus stop facilities throughout the service area, adding shelters at key locations and improving access to certain stop locations. Installation of Automatic Vehicle Locators (AVL) on MTA's transit vehicles will improve dispatching for the dial-a-ride service, and will also put MTA in a position to report arrival times at its major bus stops, such as the Petway shelters located downtown.

Calculations used to estimate the emission reductions from improving bus ridership can be found in Section 3.3.15A "Improve Bus Ridership" in the report *Estimates of Potential Emission Reductions For The Nashville Ozone Early Action Compact Areas.* Table 3.15A.2 shows the expected emission reductions for the area.

Section 4-8. New Rail Service (Nashville-Lebanon corridor)

The region is establishing a commuter rail line between Nashville and Lebanon, much of which is being funded through Congressional earmarks. However, significant portions will also be funded by local governments in Davidson and Wilson counties. The following local governments are contributing local matching funds for the project's capital costs:

- Metro Nashville/Davidson County;
- City of Mt. Juliet;
- City of Lebanon; and
- Wilson County.

In addition, all the local governments of the five-county Nashville MPO have jointly programmed $1.2 million to help operate the commuter rail line for its first three years.

Calculations used to estimate the emission reductions from the addition of these HOV lanes can be found in Section 3.15B "New Rail Service" in the report *Estimates of Potential Emission Reductions For The Nashville Ozone Early Action Compact Areas.* Table 3.15B.3 shows the expected emission reductions for the area.

Section 4-9. Land Use Planning that Reduces Driving

The five MPO counties as well as Robertson County will benefit from an integrated planning approach that emphasizes the relationship between land use and transportation. Local governments in all of these counties have received training in the past two years through regionally sponsored workshops on creating “walkable communities,” as well as other workshops held across Middle Tennessee. New mixed-use projects are beginning to appear which will help reduce the number of auto trips made by area citizens. Several cities have adopted changes to design standards and zoning that promote pedestrian activity, and others are currently considering such changes.

Changing travel habits through land use planning is a cumulative effort that typically takes years to show full results. It is also understood that the other investments on this list, such as rideshare, transit, and improved pedestrian/bike facilities, will also account for some change in vehicle-miles traveled. The counties have thus set a modest goal for the effects of land use planning, of a one percent reduction in vehicle-miles traveled by 2007.

Calculations used to estimate the emission reductions from land use controls to reduce vehicle miles of travel (VMT) can be found in Section 3.20 "Land Use Controls to Reduce VMT" in the report *Estimates of Potential Emission Reductions For The Nashville Ozone Early Action Compact Areas.* Table 3.20.1 shows the expected emission reductions for the area.

Section 4-10. Air Quality Action Days

Air Quality Action Days (AQAD) will be called on days when the air quality is forecast to be in or worse than the unhealthy for sensitive groups category as determined by the EPA air quality index. The intent is to alert area residents the day prior to a forecast AQAD so that actions can be taken to reduce emissions. This requires air quality to be forecast at least one day in advance. In the case of weekends and holidays, a two or three day forecast will be issued. The local governments of the Nashville MPO have programmed $761,500 in funding for the program in 2004-2006. This will include benchmarking and evaluation to measure the program’s effect.

Forecasting for the Nashville EAC area is performed by meteorologists with the State of Tennessee Air Pollution Control Division (TNAPCD). A two-day forecast is prepared Monday through Thursday and a three-day forecast is prepared on Friday to cover the weekend. Longer forecasts are made to cover long weekends. The forecast is

distributed via email by approximately 2:00 PM CST (or DST). The forecast includes PM2.5 throughout the year, and ozone from March 1 through October 31.

The forecast is subsequently made available through EPA, state, and local websites, local and national news and weather media, and by recorded telephone message. The websites and recorded telephone message give the air quality forecast and define the appropriate sensitive groups, cautionary statement and health effects.

The Clean Air Partnership of Middle Tennessee is planning to initiate an Air Alert (AQAD) program for Middle Tennessee. The program is set to start on May 1, 2004. An Air Alert will be issued on days when the air quality forecast predicts that the air quality may be in or worse than the unhealthy for sensitive groups category as determined by the EPA air quality index. An Air Alert will notify the public through emails to employers before the end of the work day, through drive-time radio weather and traffic reports, on freeway variable message boards, by TV news and weather programs, and in morning print news media. The air alerts will include the AQI health-based activity advisories, and will also have messages encouraging people to avoid or postpone activities that generate air pollution until the air quality improves. Examples of air alert actions people will be asked to take include:

- bringing their lunch to work;
- planning a short trip on foot or bicycle rather than by car;
- postponing errands, especially during rush hour;
- postponing use of gas-powered lawn and garden tools;
- carpooling;
- taking the bus; and
- telecommuting or flexing work schedules to avoid rush hour.

A PSA campaign which will include TV, radio, and print advertising in various venues will help educate the general public about their contributions to Middle Tennessee air quality, and encourage activities such as trip chaining, car maintenance, and conserving energy. The annual Nashville Earth Day celebration on April 17, 2004 will have an area with several booths devoted to air education, and the Nashville Earth Day celebration in 2005 is planned to have an Air Quality theme. Additional media events and press releases will also draw attention to and educate people about the air alert program.

Employers will be reached through Chambers of Commerce in the Nashville EAC counties, as well as other direct contacts. Employers will be encouraged to not only distribute the air alerts to their employees, but also develop programs to encourage their employees to participate in the air alerts by adjusting their activities on air alert days. Companies will also be asked to reduce their own contributions to air pollution on air alert days by postponing certain activities where possible. Employers will be encouraged to track and report their participation through awards and recognition. Participating employers on the Clean Air Partnership steering committee include:

- Vanderbilt University;
- HCA Healthcare;
- Tennessee Department of Environment and Conservation;
- Metropolitan Transit Authority;

- Regional Transportation Authority;
- Metro Public Health Department;
- Tennessee Department of Health;
- Tennessee Department of Transportation; and
- Tennessee Valley Authority.

Telephone surveys are being used to track the effectiveness of the public information campaign and changes in behavior throughout the air alert program. A baseline survey was conducted by a joint Vanderbilt/Metro Health Department collaboration in August/September of 2003, and a repeat survey is currently planned for the same time in 2004 to evaluate the effectiveness of the program. The program will continue throughout the year, using seasonal materials and messages customized for Middle TN from EPA's "It All Adds Up to Cleaner Air" program.

All of these actions are voluntary and will only be as effective as participation in the program. Therefore, the emission reductions estimated and actually obtained are difficult to quantify. The methodology chosen to estimate the emission reductions is described in Section 3.21. Air Quality Action Days in the report *Estimates of Potential Emission Reductions for the Nashville Ozone Early Action Compact Area*. Table 3.21.1 shows the expected emission reductions for the area. Briefly, the estimated reductions are based on a 1.0% reduction in the highway vehicle emissions from MOBILE6 in the Nashville EAC counties. As stated previously, employers will be encouraged to track and report their participation through any appropriate means including awards and recognition of participants.

Section 5. Conclusion

The Nashville EAC counties and stakeholders are pleased that the area has projected that attainment with the 8-hour ozone standard will be achieved by December 31, 2007. With the submission of the local portion of the Air Quality Improvement Plan and supporting documentation, we are requesting that the Environmental Protection Agency defer the implementation of the Clean Air Act measures that would typically be imposed on our area based on a finding of nonattainment. We are committed to remaining in the EAC program. The components of this submittal will be combined with the control measures from the State of Tennessee and a SIP submittal will be made on or before December 31, 2004.

APPENDIX 1

EXCERPTS FROM 2004 - 2006 TRANSPORTATION IMPROVEMENT PROGRAM

APPENDIX 2

ESTIMATES OF POTENTIAL EMISSION REDUCTIONS FOR THE NASHVILLE OZONE EARLY ACTION COMPACT AREAS